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| 10/005,060 | 12/04/2001 | Hyang Yul Kim | CU-2746 RJS | 9194 |

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LADAS & PARRY
224 SOUTH MICHIGAN AVENUE, SUITE 1200
CHICAGO, IL 60604

| EXAMINER |
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LANDAU, MATTHEW C

| ART UNIT | PAPER NUMBER |
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2815

DATE MAILED: 07/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/005,060

Applicant(s)

KIM ET AL.

Examiner

Matthew Landau

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 7 is/are allowed.
- 6) ☒ Claim(s) 1-6 and 814 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☒ The proposed drawing correction filed on 09 May 2003 is: a) ☐ approved b) ☒ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The proposed drawing correction and/or the proposed substitute sheets of drawings, filed on May 9, 2003 have been disapproved. A proper drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The correction to the drawings will not be held in abeyance.

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. The drawings do not show the distance between the counter electrodes since only one pixel is shown. The drawings also do not show the rubbing direction corresponding to the noise field formed between the gate bus line and the pixel electrode. These features must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Claim Objections

Claim 6 is objected to because of the following informalities: there is insufficient antecedent basis for "the distance". Appropriate correction is required.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 5, 9, and 14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In regards to claim 5, it is unclear how there can be no black matrix on the upper substrate since claim 4, from which claim 5 depends, has a black matrix on the upper substrate. Claim 9 has similar problems. For the purpose of this Office Action, it is considered claim 5 depends from claim 1 and claim 9 depends from claim 13. Also, the limitation in claim 9 “no black” should be changed to read “no black matrix”.

In regards to claim 14, it is unclear how the rubbing direction can be parallel to the gate bus line and parallel to the noise field formed between the data bus line and the electrodes. Claim 13, from which claim 14 depends, indicates the rubbing direction corresponds to the noise field formed between the gate bus line and the electrodes (i.e., parallel to the gate bus line). For the purpose of this Office action, it is considered claim 14 depends from claim 1.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 5, and 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US Pat. 6,256,081, hereinafter Lee).

In regards to claim 1, Figures 2 and 3 of Lee disclose a liquid crystal display device comprising: a lower substrate 20 having a lower inner surface and a lower outer surface, wherein the lower substrate is rubbed for alignment of liquid crystal molecules; a lower polarizing plate 37 formed on the lower outer surface; an upper substrate 30 having an upper inner surface and an upper outer surface, wherein the lower inner surface and the upper inner surface face each other at a distance in a substantially parallel manner; an upper polarizing plate 39 formed on the upper outer surface; a counter electrode 23 formed on a portion of the lower inner surface, wherein the counter electrode has a rectangular plate shape; an insulating layer formed on the counter electrode and the lower inner surface (column 8, lines 1-5); a pixel electrode 27 formed on a portion of the insulating layer, wherein the pixel electrode is patterned as a plurality of V-shaped electrical conductors; a data bus line 25 formed on a portion of the insulating layer; and a gate bus line 21 formed substantially perpendicular to the data bus line; wherein a noise field is formed between the data bus line and the pixel/counter electrode, and further wherein the rubbing direction R_1 of the lower substrate corresponds with a direction of the noise field formed. Note that it is inherent to have a noise field between the data bus line and the electrodes.

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In regards to claim 2, Figure 3 of Lee discloses the counter electrode 23 and the pixel electrode are made of a transparent electrical conductor including an indium tin oxide (ITO) for forming a fringe field switching (FFS) mode (column 7, lines 27-29 and column 8, lines 1-5).

In regards to claim 5, Figures 2 and 3 of Lee disclose the rubbing direction R_1 of the lower substrate 20 is substantially parallel to the gate bus line 21 and there is no black matrix formed on the upper surface of the upper substrate 30.

In regards to claim 10, Figure 2 of Lee discloses the upper substrate 30 has a rubbing direction R_2 anti-parallel to that of the lower substrate.

In regards to claim 11, Figure 2 of Lee discloses the lower polarizing plate 37 has a polarizer axis P corresponding with the rubbing direction R_1 of the lower substrate 20.

In regards to claim 12, Figure 2 of Lee discloses the upper polarizing plate 39 has an analyzer axis A perpendicular to the rubbing direction R_1 of the lower substrate 20.

Claims 13 and 8 are rejected under 35 U.S.C. 102(e) as being anticipated by Hiroshi.

In regards to claim 13, Figures 4 and 5 of Hiroshi disclose a liquid crystal display device comprising: a lower substrate 27 having a lower inner surface and a lower outer surface, wherein the lower substrate is rubbed for alignment of liquid crystal molecules; a lower polarizing plate 63 formed on the lower outer surface; an upper substrate 26 having an upper inner surface and an upper outer surface, wherein the lower inner surface and the upper inner surface face each other at a distance in a substantially parallel manner; an upper polarizing plate 64 formed on the upper outer surface; a counter electrode 49 formed on a portion of the lower inner surface; an insulating layer 57 formed on the counter electrode and the lower inner surface; a pixel electrode 48 formed

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on a portion of the insulating layer; a data bus line 42 formed on a portion of the insulating layer; and a gate bus line 41 formed substantially perpendicular to the data bus line, wherein a rubbing direction of the lower substrate corresponds with a direction of noise field formed between the gate bus line and the counter/pixel electrode (page 3, para. [0046]). Note that it is inherent to have a noise field between the gate bus line and the electrodes.

In regards to claim 8, Figure 5 of Hiroshi discloses the rubbing direction of the lower substrate is perpendicular to the gate bus line 41 (page 3, paragraph [0046]), and the noise field is formed between the gate bus line and the counter electrode, and therefore, black matrix 51 of the upper substrate 26 is formed on the gate bus line to have the same width or smaller than that of the gate bus line (page 3, para. [0044]).

Claims 13 and 9 are rejected under 35 U.S.C. 102(b) as being anticipated by Asada et al. (US Pat 5,745,207, hereinafter Asada).

In regards to claim 13, as best the examiner can ascertain the claimed invention, Figures 1 and 4 of Asada disclose a liquid crystal display device comprising: a lower substrate 10 having a lower inner surface and a lower outer surface, wherein the lower substrate is rubbed for alignment of liquid crystal molecules; a lower polarizing plate 14 formed on the lower outer surface; an upper substrate 11 having an upper inner surface and an upper outer surface, wherein the lower inner surface and the upper inner surface face each other at a distance in a substantially parallel manner; an upper polarizing plate 13 formed on the upper outer surface; a counter electrode 2 formed on a portion of the lower inner surface; an insulating layer formed on the counter electrode and the lower inner surface (column 5, lines 28-56); a pixel electrode 4 formed

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on a portion of the insulating layer; a data bus line 3 formed on a portion of the insulating layer; and a gate bus line 1 formed substantially perpendicular to the data bus line, wherein a rubbing direction A of the lower substrate corresponds with a direction of noise field formed between the gate bus line and the counter/pixel electrode. Note that it is inherent to have a noise field between the gate bus line and the electrodes.

In regards to claim 9, Figure 4 of Asada discloses the rubbing direction A of the lower substrate is perpendicular to the gate bus line and there is no black matrix of the upper substrate.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida et al. (US Pat. 6,285,429, hereinafter Nishida) in view of Suzuki et al. (US PGPub 2003/0133068, hereinafter Suzuki).

In regards to claim 1, Figures 1(a), 1(b), 4(a), and 4(c) of Nishida disclose a liquid crystal display device comprising: a lower substrate 1 having a lower inner surface and a lower outer surface, wherein the lower substrate is rubbed for alignment of liquid crystal molecules; a lower polarizing plate 5 formed on the lower outer surface; an upper substrate 6 having an upper inner surface and an upper outer surface, wherein the lower inner surface and the upper inner surface

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face each other at a distance in a substantially parallel manner; an upper polarizing plate 9 formed on the upper outer surface; a counter electrode 12/12a formed on a portion of the lower inner surface, wherein the counter electrode has a rectangular plate shape; an insulating layer 2 formed on the counter electrode and the lower inner surface; a pixel electrode 15 formed on a portion of the insulating layer, wherein the pixel electrode is patterned as a V-shaped electrical conductor; a data bus line 14 formed on a portion of the insulating layer; and a gate bus line 11 formed substantially perpendicular to the data bus line; wherein a noise field is formed between the data bus line and the pixel/counter electrode, and further wherein the rubbing direction of the lower substrate corresponds with a direction of the noise field formed. Note that it is inherent to have a noise field between the data bus line and the electrodes. The difference between Nishida and the claimed invention is the pixel electrode having a plurality of V-shaped conductors. Figure 12 of Suzuki discloses a LCD device with a pixel (source) electrode 71 comprising a plurality of v-shaped conductors. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to modify the invention of Nishida by using a plurality of conductors in the pixel electrode. The ordinary artisan would have been motivated to modify Nishida in the manner described above for the purpose of increasing the capacity and efficiency of the device.

In regards to claim 3, Nishida discloses the counter electrode and the pixel electrode are made of an opaque electrical conductor (column 7, lines 30-62) for forming an in-plane switching (IPS) mode.

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Claims 4 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nishida in view of Suzuki as applied to claim 1 above, and in further view of Ota et al. (US Pat. 6,198,464, hereinafter Ota).

In regards to claim 4 and 6, Figure 1a of Nishida discloses the rubbing direction of the lower substrate 1 is parallel to the gate bus line 11, which is also substantially parallel to the direction of the noise field formed between the data bus line and the counter/pixel electrode. A further difference between Nishida and the claimed invention is a black matrix is formed on the upper inner surface substantially covering the data bus line, wherein the black matrix has a width substantially equal to or smaller than the distance between the counter electrode in one pixel and another counter electrode in an adjacent pixel. Figure 1 of Ota discloses a black matrix 23 substantially covering the signal (data) bus line 2, where in the black matrix has a width smaller than a distance between the counter electrode 4 in one pixel and the counter electrode in an adjacent pixel. In view of such teaching, it would have been obvious to the ordinary artisan at the time the invention was made to further modify the invention of Nishida by including the black matrix of Ota for the purpose of improving contrast (column 8, lines 45-50).

Allowable Subject Matter

Claim 7 is allowed.

Claim 14 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, first and second paragraphs, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: the prior art of record, either singularly or in combination does not disclose or suggest at least the black matrix formed on the upper inner surface has a width of less than 6 μm .

Response to Arguments

Applicant's arguments with respect to claims 1-14 have been considered but are moot in view of the new ground(s) of rejection.

Regarding Applicants statement that "Lee is not a proper §102(e) prior art reference against the present application", while Lee does share a common inventor with the present application, it has a different inventive entity and therefore qualifies as a proper 102(e) reference. The effective filing date of Lee (May 26, 1999) is before the priority date of this application.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

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will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matthew C. Landau whose telephone number is (703) 305-4396.

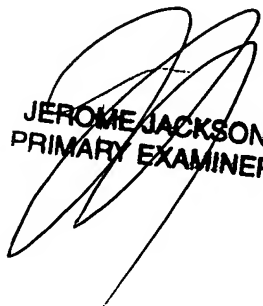
The examiner can normally be reached from 8:00 AM-4:30 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7722 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Matthew C. Landau

Examiner

July 20, 2003


JEROME JACKSON
PRIMARY EXAMINER